

**WHAT IS CLAIMED IS:**

1. A pixel processing apparatus, comprising:
  - a frame storage unit in which input pixel data is stored in frame/field units;
  - a line storage unit in which the input pixel data, which is stored in the frame storage unit in frame/field units, is stored in line units per vertically-divided segment;
  - a processor that pre-processes or post-processes the input pixel data stored in the line storage unit; and
  - a controller that divides the input pixel data within a frame, which is stored in the frame storage unit, into a plurality of segments in a vertical direction, and sequentially stores the input pixel data in the line storage unit in a sequence of segments in line units.
2. The apparatus of claim 1, wherein a size of the line storage unit is determined by dividing a line length of a frame by K, wherein K is an integer greater than 1.
3. The apparatus of claim 1, wherein the controller sequentially stores input pixel data in a segment among the plurality of segments in the line storage unit in line units, sequentially stores input pixel data in a next segment

in the line storage unit in line units, and repeats storing of pixel data in other segments until reaching a segment of a predetermined number.

4. A pixel processing method comprising:

dividing pixel data within a frame into a plurality of segments in a vertical direction;

sequentially pre-processing or post-processing the pixel data in a segment among the plurality of segments in line units and then, sequentially pre-processing or post-processing the pixel data in a next segment in line units; and

repeating pre-processing or post-processing on the pixel data in other segments in line units until reaching a segment of a predetermined number.

5. The method of claim 4, wherein each of the plurality of segments within the frame overlaps another of the plurality of segments by a predetermined number of pixels.

6. A method of processing pixels in a frame that is divided into a plurality of segments, the method comprising:

storing pixel data at a first line of a  $k^{\text{th}}$  segment in line units;

pre-processing or post-processing the pixel data after storing the pixel data in a predetermined number of line units and outputting corresponding pre-processed or post-processed pixel data;

separately storing the pre-processed or post-processed pixel data and then, checking whether pre-processing/post-processing is performed on the pixel data at a last row of the  $k^{\text{th}}$  segment or not;

checking whether the  $k^{\text{th}}$  segment is a segment of a predetermined number after the pre-processing/post-processing on the pixel data at the last row; and

completing segment-based pixel processing when the  $k^{\text{th}}$  segment is the segment of the predetermined number, and repeating the pixel processing until reaching the segment of the predetermined number when the  $k^{\text{th}}$  segment is not the segment of the predetermined number.

7. A computer-readable recording medium for recording a computer program code for enabling a computer to provide a service of processing pixels, the service comprising the steps of:

dividing pixel data within a frame into a plurality of segments in a vertical direction;

sequentially pre-processing or post-processing the pixel data in a segment among the plurality of segments in line units and then, sequentially

pre-processing or post-processing the pixel data in a next segment in line units; and

repeating pre-processing or post-processing on the pixel data in other segments in line units until reaching a segment of a predetermined number.

8. The computer-readable recording medium of claim 7, wherein each of the plurality of segments within the frame overlaps another of the plurality of segments by a predetermined number of pixels.

9. A computer-readable recording medium for recording a computer program code for enabling a computer to provide a service of processing pixels, the service comprising the steps of:

storing pixel data at a first line of a  $k^{\text{th}}$  segment in line units;

pre-processing or post-processing the pixel data after storing the pixel data in a predetermined number of line units and outputting corresponding pre-processed or post-processed pixel data;

separately storing the pre-processed or post-processed pixel data and then, checking whether pre-processing/post-processing is performed on the pixel data at a last row of the  $k^{\text{th}}$  segment or not;

checking whether the  $k^{\text{th}}$  segment is a segment of a predetermined number after the pre-processing/post-processing on the pixel data at the last row; and

completing segment-based pixel processing when the  $k^{\text{th}}$  segment is the segment of the predetermined number, and repeating the pixel processing until reaching the segment of the predetermined number when the  $k^{\text{th}}$  segment is not the segment of the predetermined number.